GPRA Project: Realitivistic Relativity 2.0

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This work introduces an alternative theoretical framework to Einstein's SRT. It is a velocity dependent relativity theory similar in respect to SRT with regards to length contraction, but significantly different in all other aspects. It includes size scaling dependent on velocity and a Universal static frame of reference. It details that star and atomic systems are the same thing at two different points on the velocity spectrum, where star systems exist at low velocities and atomic systems exist at high velocities near and at the speed of light, and that our Solar System is a celestial Beryllium atom. The mathematical observations detailed in this work are beyond doubt extremely interesting. It mathematically derives the elementary charge $1.6022\text{x}10^{-19}\text{C}$ and also derives Avogadro's constant $N_A = 6.022\text{x}10^{-23}$. The observations show that mass and charge are the same thing at two different points on the velocity spectrum, that gas-giant planets in the outer system have a direct scale relationship to electrons, that rock planets in the inner system are directly related to neutrons, that the star itself is related to protons and that asteroids are related to photons. This radical, simple and highly intuitive work maps celestial objects to their quantum counter-parts mathematically with extraordinary accuracy.

1. Introduction

Niels Bohr's analogy between star and atomic systems has always been a source of fascination for me. Bohr, a very intelligent and respected individual, must have seen obvious common characteristics between the two systems to make such an analogy. Over 20 years ago, I had an infant belief that Einstein's length contraction had a direct correlation to Bohr's analogy with regards to scale. 15 years ago, while studying engineering and physics, it was realized that Einstein's mass and time dilation equations (SRT) contradicted this infant belief that length contraction was related to Bohr's analogy, but the idea persisted as I continued my studies until the official demotion of Pluto on August 24, 2006. Pluto's demotion sparked insight into the number 4 in our Solar System; 4 rock planets (inner system) and 4 gas-giant planets (outer system). It was speculated that 4 was related to the atomic number of our system, which equated to a Beryllium atom.

In 2007, a scale value (S) between the two systems was derived. Using this scale value, it was also derived that Jupiter's mass was a scale equivalent to an electron's charge. This research was onto something. In late 2007, I wrote a book titled "The General Principles of Reality A" and a paper titled "Realitivistic Relativity" focusing on this scaling theory. The following is a continuation of this initial work, with some extremely interesting results, proving that old ideas really do die hard.

2. Theoretical Premise

There are obvious similarities between star and atomic systems. The two systems are the only natural systems to have a low number of quantifiable objects circulating around a large core. Star system objects travel much slower than the speed of light while atomic system objects travel near or at the speed of light. If star and atomic systems are more than just remotely similar, then properties and characteristics held by atoms could be superimposed onto star systems and vice-versa.

One obvious property is the atomic number defined partially by the electron count. Electrons form the outer body of the atom, as gas-giant planets form the outer body of our star system and that of many others. Is there a link between electrons and gas-giants? If the two systems and their objects are relative to each other, then one obvious link between the two systems is through scale

3. GPRA Project

GPRA is the acronym project title of this research which stands for the "General Principles of Reality Alpha". The project is the embodiment of this research which is to determine obvious and ambiguous truths in nature, to explore them, link them and to analyze known empirical experiments and data from every conceivable and inconceivable angle to determine if they are truly thorough and complete. The project is to determine if physical interpretations and definitions can be defined differently from different perspectives and to re-construct a new physical model of nature based on this reexamination. Subsequently, this project's mission is to reexamine any new model for correctness and to make it continually better, simple and avoid complexity at all costs. Ultimately, this project must result in computerizing a virtual environment of this model.

3.1. Project Goals

The project's goals are to explore similarities between star and atomic systems starting with scale, formulate a hypothetical model based on obvious truths, compare any new theoretical model with known data, determine where the data fits, refining the model where it doesn't, apply versioning and ultimately rewrite and unite physics into the most simplistic model possible.

4. Premise of Analysis

4.1. Perspective

To properly conduct a reexamination, the perspective of analysis must start from a fundamental stance and to consider the very obvious classical facts and theory, such as Newtonian physics, as most correct while all other theories and interpretations are to be ignored. It is important to reconsider experimental

data independent of existing interpretations and to keep the analysis grounded to actual physical context.

4.2. Progressive

This research must be philosophically progressive. The philosophical position of this research is to question and re-question everything indefinitely. It is to verify non-verified predictions and to falsify or cast doubt, through mathematical or experimental contradiction, on existing accepted predictions through truly exhaustive attempts by any conceivable, plausible, and most importantly, inconceivable means. Only after such exhaustive attempts that the initial hypothetical or theoretical framework must change.

4.3. Simple

Keep it simple. Start from the very obvious and attempt to avoid assumed or imaginary theoretical complexities. Define new concepts simplistically so everyone, or the majority, can understand.

5. Forward Summary of Observations

5.1. Mass-Charge Equivalence

Mass and charge are the same thing existing in two different space-time densities ($\text{kilogram} = \text{coloumb}$). It is experienced differently due to large difference in velocity. Due to this, electric and gravity force are also the same thing.

5.2. Gravity Attracts and Repels

Strength of force is based on the mass-density ratio of the matter objects involved and related to their velocity which increases or decreases the passage of time. Wave theory defines the complex character of this force.

5.3. Quantum to Celestial Object Equivalence

Celestial and quantum objects are the same thing separated in two different space-time densities or at two different points on the velocity spectrum. Space-time density on the object is directly proportional to the velocity of the object in the surrounding space.

6. Definitions

6.1. Actuality vs. Human Interpretation

Actuality refers to actual physical context and the very obvious truths and observations of nature. The human interpretation of observational data has always taken on an imaginary element due to what remains unknown. More recently there is a stringent belief that mathematics is infallible when interpreting data. In actuality, mathematics can be just as imaginary as the human mind depending on its context which is again defined by the human. "I have 3 pink elephants," the math is right, but the context is imaginary.

Currently from our point of understanding, there are theories for the existence of God and theories for the existence of strings both of which cannot be proven absolutely wrong and very logical arguments can be made for both. The very obvious is that both exist between large areas of unknown which begs a very fundamental question. What do we really know? In order to see the obvious and see it clearly we have to go back to the beginning and ask some very simple questions:

- What really is space?
- What really is time?
- What really are atoms?
- What really are quantum particles?
- What really is light?
- And all that amounts to what really is matter?
- What really is life? How does it arise and work?

What we really know are that all these unknown things are connected and defined somewhat in the framework of modern science.

6.2. What is Real?

To be real is to be something tangible, easily seen and understood. Atoms are somewhat tangible but not easily seen up close as we would see a rock in our hand and due to that it cannot be fully understood leaving lots of room for misinterpretation of data. Quantum particles are not fully tangible and have never been seen up close because our instrumentation still lacks the ability to truly do so.

7. Assumptions

- Space and time are infinitely homogenous
- The Universe is infinitely big

7.1. Infinitely Homogenous

Something that is infinitely homogenous means that it is uniform at any scale, infinitely divisible, which also means scale is invariant. By using a very powerful instrument, similar to a telescope, to see a finite piece of space extremely up close, space will still have a 3D characteristic no matter how small the space being analyzed is, even if there are fluctuations in that analyzed space, the 3D characteristic of space is still needed to see those fluctuations therefore it remains homogenous.

8. Space-Time (ζ)

It is obvious that space and time define each other. One cannot be measured without the other as conducted by a person or our derived instrumentation. In actuality, space and time are not separate. Space-time is a singular "thing" and inseparable. No measurement can be made without the passage of time in actual physical context. All objects in the Universe are comprised of space such as a rock and all its atoms. There is space between atoms and between quantum particles. Space is infinitely homogenous, therefore so is time.

9. Universal Static Frame of Reference

9.1. Actual Relativity Perspective

Two objects traveling relative in opposite directions, display relative velocities ($v_1 = v_2$) if the two objects only reference each other. Two objects traveling relative in opposite directions but seen from a 3rd position, frame of reference, object 1 and object 2 are possibly not traveling at the same velocity. If this 3rd frame of reference is the surrounding Universe, which is essentially static from our perspective the larger the containing reference becomes, object 1 and object 2 are possibly not traveling at the same velocity in reference to this Universal reference. In actuali-

ty, all objects traveling within the Universe reference this Universal static frame of reference by which all relative measurements (and positioning) are obtained for all objects in the Universe. The larger the celestial object, such as galaxy clusters, the more static they are in reference to smaller objects.

A static Universal frame of reference exists at an infinitely large scale all around us because the Universe exists all around us seemingly unchanged during our life time. For example the Big Dipper has existed virtually unchanged for thousands of years, well beyond our lifetimes, but the Earth goes around the Sun about 75 times over the course of an average lifetime.

Planets change faster than star systems, star systems change faster than entire galaxies, galaxies change faster than galaxy clusters, and it is deduced that our entire perceived Universe (a super cluster of galaxies) changes faster than a super-super cluster of galaxies. The change can be measured in angular velocity.

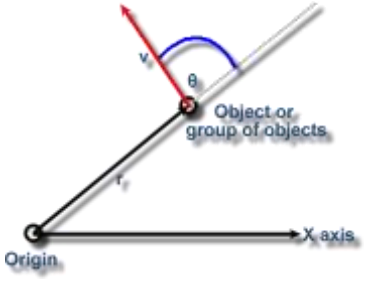

Fig. 9.1. Measurement of change via angular velocity

$$\omega = \frac{|\mathbf{v}|\sin\theta}{r}$$

As the distance (r) increases approaching infinity (∞), angular velocity (ω) approaches zero (0) while the object's velocity (v) remains finite and constant.

The larger the system scale, the slower the motion is for the entire system in relation to smaller scaled systems. This implies, because it's impossible to measure, that at an infinitely sized system, the whole Universe, is static in motion. It doesn't move. This is actuality not fantasy. Einstein's notion of relative frames of reference work well in an imaginary Universe where small finite number of objects existed and would reference only each other (2 objects usually). In reality, that Einsteinian Universe, as far as we can "see", doesn't really exist. The actual Universe is riddled with an infinite number of objects of infinitely various scales and velocities. So to see a static frame of reference, and to fully understand it, you have to see it at the infinitely largest scale.

In relation to us, our planet will travel around the Sun thousands or millions of times before the entire galaxy cluster makes any considerable movement in relation to other galaxy clusters and to us. From our perspective, we can virtually hard-wire all our Universal positioning systems in reference to the location of these galaxy clusters (or even just the galaxies themselves) and these Universal positioning systems will work perfectly, long outlasting you and me because the galaxy clusters (and galaxies) will still be there to reference way after we're gone. Stars in the galaxies might change, but the whole system will still be there.

9.2. Space Moves through Moving Matter

In actual space, a 3D coordinate in space is fixed in reference to the rest of the whole Universe. Due to space being infinitely homogenous and it having a Universal static nature (a stationary nature), it can be said that a point in space actually exists as an infinitely small static "object" of space. An infinitely small object will pass with no effort through the large spaces between atoms and quantum particles in any object.

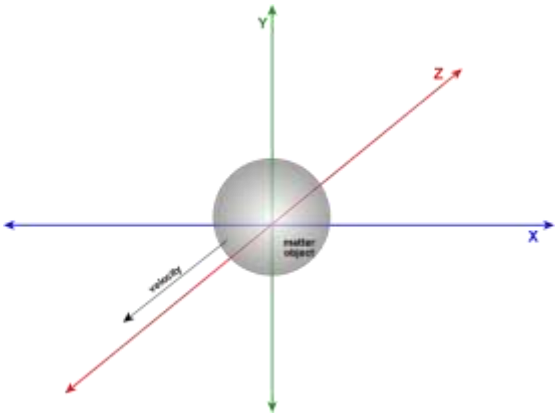

Fig. 9.2. Object passing through stationary coordinate

Empty space, and every 3D coordinate in it, remains stationary while it moves through the moving object.

10. Space-Time Density Concept

Empty space does not move when any object is moving through it. Space moves through the moving object. In actuality, all matter in the Universe is moving at various velocities. The faster the object, the more space it moves through, the more space passes through the object, therefore the more space-time the object exists in. Space-time density is directly proportional to the object's velocity. Mass-density to space-time density ratio is postulated to be a natural constant. To maintain this constant as space-time density increases in relation to velocity, the matter density of the object must also increase. The higher the matter density, the smaller the object becomes as it condenses in size. The higher the space-time density, the faster time passes within it.

$$\text{Density}_{\xi} \propto \text{Object's Velocity}$$

$$\text{Constant} \propto \frac{\text{Density}_{\xi}}{\text{Density}_{\text{matter}}} \qquad (10.1)$$

Why is the ratio between space-time density and matter density a constant? It is a constant in order to maintain normalcy from the moving object's perspective in all inertial frames of reference at any given velocity. The only exception is when the object is accelerating between two velocities or when the object's momentum is changing.

For a ratio between space-time density and matter density to remain constant as the object's velocity increases, the matter density must increase to compensate for the increase in space-time density. Remember, the faster the object, the more space moves through it, therefore the denser the space it exists in. Since the object has a finite number of atoms, an increase in density means the object "shrinks" in size.

10.1. Matter

Matter is an "imbalance" in the infinitely homogenous space-time. It can be defined as denser space-time existing in less dense

space-time. What causes, or caused, this imbalance producing known matter is a mystery and beyond the scope of this paper, but because of the fact that matter is comprised of space between all its continuously scaling substructures, it can be said that matter is a geometric formation within space comprised of space at various space-time densities. By accepting the infinite scaling of matter, then at an infinitely small scale, essentially at the beginning of a matter object, matter starts from a singularity imbalance in space-time which connects to other matter singularities creating geometric forms. These geometric forms connect to other geometric forms continuously getting bigger at a specific scale interval. This scale interval would easily explain discrete objects such as quanta, quantum particles, atoms, molecules and star systems.

11. Hypothesis of Universal Scaling

If space-time density as perceived by a moving object increases by increasing its velocity which subsequently shrinks the size of the object, and if all matter exists based on a continuously discrete scaling interval forming its scale intervals of material substructure, *it is deduced that star systems separated by a discrete scale interval could actually be atoms moving at different velocities.*

It is very well known and obvious that various quantum particles in an atom move near, at and possibly faster than the speed of light. It is also very well known that planets and asteroids moving within a star system travel at very low velocities in comparison. What is very interesting is that they travel near the square root of the speed of light which is the velocity of asteroids in Asteroid Belt (a unique formation):

$$v = \sqrt{299792429} = 17315 \text{ m/s} \tag{11.1}$$

If star systems are equivalent to atoms, then the outer most planets would be equivalent to celestial electrons. In our Solar System, there are 4 gas giants in the Outer System and 4 rock planets in the Inner System. 4 being a significant number could correspond to the atomic number. The Beryllium atom has an atomic number of 4. In summary:

- Gas giants are electrons
- Inner planetary system is the atomic nucleus
- Rock planets are neutrons
- Stars are comprised of one or more protons fused together by the star's own matter
- The Asteroid and Kuiper belts are natural formations common to the majority of systems distinguishing a separation between the inner and outer system
- The Kuiper belt and Scattered disc form the outer boundary of the system
- Specific atoms have relative scale equivalent star systems based on the corresponding atomic number to the number of gas giants
- Photons are made of asteroids at the quantum scale from the Asteroid Belt and near it, up to the 1st gas-giant's orbit travelling close to c or 17315 m/s (square root of c) depending the scale level

11.1. Reality Scale Constant

If our Solar System and the Beryllium atom are the same type of system separated in two very different space-time densities, then what is the scale difference between the two systems? Is that scale difference between these two systems a Universal scale constant?

$$S = \frac{r_{\text{Solar System}}}{r_{\text{Beryllium}}} \tag{11.2}$$

$$r_{\text{Solar System}} = \frac{r_{\text{Kuiper Belt}} + r_{\text{Scattered disc}}}{2}$$

$$r_{\text{Solar System}} = 77.5\text{AU} = 11593834978552.5 \text{ m} \tag{11.3}$$

$$r_{\text{Beryllium}} = 105\text{pm} \tag{11.4}$$

$$S = \frac{11593834978552.5\text{m}}{105\text{pm}}$$

$$S = c_o{}^e = c_o{}^{2.718281828459} = 1.1025 \times 10^{23} \tag{11.5}$$

Radius of the Solar System ($r_{\text{Solar System}}$) extends from the Kuiper belt into the Scattered disc because Scattered disc objects still orbit the star and are part of the system. The radius of the Beryllium atom ($r_{\text{Beryllium}}$) is the measured radius and not the calculated value. c_o is the numerical value of the speed of light with no units.

The S value relation to the numerical value of the speed of light (11.5) implies that scale is directly proportional to velocity (v) of the object.

$$S \propto v = \frac{dx}{dt}$$

$$\text{scale} = s(v) = v^e = \left(\frac{dx}{dt}\right)^e \tag{11.6}$$

The derived units in this equation (11.6) make little sense unitarily, so the following convention was developed to completely remove the units and solely focus on the values:

$$s(v) = \left[\sqrt[e]{S}\left(\frac{v}{c}\right)\right]^e = \left[c_o\left(\frac{v}{c}\right)\right]^e \tag{11.7}$$

$$s(v) = \left[\lambda(v)\right]^e \tag{11.8}$$

$$\lambda(v) = \sqrt[e]{S}\left(\frac{v}{c}\right) \tag{11.9}$$

12. Model

12.1. Length Transform

The scaling value of S gives the quantum equivalent length for a celestial object. This is somewhat in-line with Einstein's length contraction, but this equation effects length, width and depth in the same manner.

$$l_q = \frac{l_o}{S},\ l_q = \frac{l_o}{s(v)} \tag{12.1}$$

12.2. Density Transform

Using the S value, a quantum to celestial mass-density formula can be derived. As perceived by us, the density of quantum matter would be S times denser than celestial matter because the distance between quantum atoms (sub-quantum particles) in quantum matter is S times smaller in any direction, thus quantum density is S times greater. The key here is each atom's size also reduces by a factor of S .

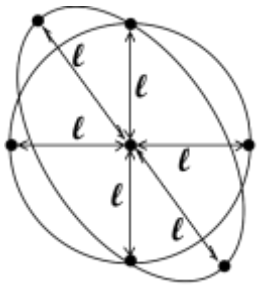

Fig. 12.1. ℓ reduces by a factor of S

$$\rho_q = S\rho_o,\ \rho_q = s(v)\rho_o \tag{12.2}$$

12.3. Matter Transform

Using simple arithmetic, the length and density transform equations result in the following mass transformation equation:

$$\frac{m_q}{\left(\frac{4}{3}\pi r_q^3\right)} = S\frac{m_o}{\left(\frac{4}{3}\pi r_o^3\right)}$$

$$\frac{m_q}{\left(\frac{r_o}{s(v)}\right)^3} = s(v)\frac{m_o}{\left(r_o^3\right)}$$

$$m_q = \frac{m_o}{s(v)^2} \tag{12.3}$$

12.4. Example of Scaling Transform Model

As calculated in 2007, the following was an astonishing example of the usage of this framework using the gas-giant Jupiter ($1.898\text{x}10^{27}$kg) as the object of transformation:

$$m_q = \frac{m_o}{S^2}$$

$$m_{\substack{\text{Jupiter}\\ \text{quantum}\\ \text{mass}}} = \frac{1.898\text{x}10^{27}\ \text{kg}}{S^2} = 1.56\text{x}10^{-19}\ \text{kg} \tag{12.4}$$

This value is numerically extremely close to the value of an electron's charge (elementary charge):

$$\approx \text{Electron charge} = 1.6\text{x}10^{-19}\ \text{C}$$

It was this remarkable example that has been the driving force to further develop the framework presented in this paper.

13. Passage of Time

If electrons are gas giants, then they travel much faster than a gas giant's natural velocity. This explicitly means that the passage of time travels faster for a gas giant planet like Jupiter traveling near the speed of light (electron) compared to a gas giant traveling at its celestial velocity around its star, because the two systems are relative representations of each other in two different space-time densities. This means that the higher the space-time density is (the faster the object moves), the faster the passage of time is and the smaller the object becomes.

13.1. Relative Quantum Passage of Time

The measured radius of Be (Beryllium) atom = 105pm. The measured radius of Pluto is $5.9064x10^{12}$ m (semi-major axis) and its orbital velocity is 4666 m/s. Using circumference ($C = 2\pi r$), the following is calculated:

$$\text{s/orbit} = 90613.31\ \text{days/orbit} = 7.8290x10^{9}\ \text{s/orbit}$$

At an estimated electron orbital velocity is (4666/17315)(c) m/s = 0.26c m/s = $7.7946\text{x}10^{7}$ m/s.

$$\text{s/orbit} = \frac{2\pi(105\text{pm})}{7.794\text{x}10^{7}\text{m/s}} = 8.4639\text{x}10^{-18}\ \text{s/orbit}$$

That results in an increase in the passage of time by a factor of:

$$\tau = \frac{7.8290x10^{9}}{8.4639x10^{-18}} = 9.2498x10^{26}$$

Note this increase in time factor is a relative perception by us on Earth which is important to understand.

Taking a lesson from the S value, this factor related to the value of c is related by a power of 3.1812 which is 98.76% similar to the value of π (another constant).

$$\frac{\log\left(9.2498x10^{26}\right)}{\log(299792429.69)} = 3.181161 \tag{13.1}$$

$$\frac{\pi}{3.181161} = 98.7562\% \tag{13.2}$$

13.2. Time Transform

As velocity increases, the passage of time also increases for the traveling object in relation to a stationary observer.

$$\tau(v) = \lambda(v)^{\pi} \tag{13.3}$$

$$\Delta t_q = \Delta t_o \tau(v) \tag{13.4}$$

Note that the passage of time directly affects the strength of force. *This breaks SRT*'s time dilation of the passage of time slowing down as velocity increases, but if atoms are accelerated star systems, time passes faster for them because electrons orbit the nucleus near the speed of light in direct comparison to gas giant velocities around their star.

14. Relative Model

The relative model is explicit with its relation to the natural initial velocities induced by multiple gravity fields on an object, which are essentially everywhere, based on its position and mass. In actuality, most system velocities are natural and the ones that are not are artificially induced. This equation is:

$$v = \sqrt{\frac{GM}{d}} \tag{14.1}$$

Here $G = 6.673x10^{-11}\, m^3/kg/s^2$, M is mass and d is distance from the mass. This equation is very simple and remarkably powerful. It states that in a naturally formed system at distance d from mass M, the orbital velocity is expected to be v. Any other velocity apart from this natural initial velocity and the object will experience acceleration or deceleration forces. For example, at the Asteroid Belt, the natural expected initial velocity is the square root of the speed of light.

$$c_s = \sqrt{\frac{GM_{\text{Sun}}}{r_{\text{Asteroid Belt}}}} = 17315 \text{ m/s}$$

Once again, this is important to note that value 17315 is the square root of the numeric value of speed of light:

$$c = 299792429.69 \text{ m/s}$$

$$(17315)^2 = 299792429.69$$

In fact a better derivation with better results to actual data of this natural velocity equation is more accurately expressed as:

$$v = \sqrt{\frac{G(M+m)}{d}} \tag{14.2}$$

where m is the mass of an object in the natural system in orbit around the larger mass M, or they are equal masses mutually in orbit around each other.

14.1. Gravitational Initial Natural Velocity

The natural initial velocity in a naturally formed system is a sum of all velocities produced by surrounding gravitational fields. The total net velocity experienced by an object is directly proportional to the amount of space (and time) the object passes through, or the amount of space that moves through the object and that it naturally exists in. This net velocity is the natural space-time density this object exists in.

$$v_o = \sum_{n=1}^{\infty}\left[\left(\sqrt{\frac{G(M_n + m_o)}{d_n}}\right)\right]$$

$$d_n = \sqrt{(x_o - x_n)^2 + (y_o - y_n)^2 + (z_o - z_n)^2} \tag{14.3}$$

The initial velocity of any object is very important to its relative transformations, therefore, based on (11.6), the relative scale and time transformation equations are:

$$s(v) = \left(\frac{v}{v_o}\right)^e \tag{14.4}$$

$$\tau(v) = \left(\frac{v}{v_o}\right)^\pi \tag{14.5}$$

In regards to Cartesian space, the equations become:

$$s(v,x,y,z) = \left(\frac{v}{v_o(x,y,z)}\right)^e \tag{14.6}$$

$$\tau(v,x,y,z) = \left(\frac{v}{v_o(x,y,z)}\right)^\pi \tag{14.8}$$

where v_o is defined above by (14.3).

14.2. Example of Length Transformation

If an object on the Earth were to accelerate to 5000 m/s (18000 km/h), how much length contraction can we calculate using this model?

$$v_o = v_{\text{Earth}} + v_{\text{Sun}} + v_{\text{Galaxy}}$$

All gravitationally induced initial velocities are summed together to provide an estimate of the total combined velocity the object is actually experiencing.

$$v_o = 29783 + 220000 + 600000 = 849783 \text{ m/s}$$

$$s(v) = \left(\frac{v}{849783\, m/s}\right)^e$$

The final velocity is added to the initial velocity.

$$s(5000) = \left(\frac{849783 + 5000}{849783}\right)^e = 1.0161$$

The scaling of the object is close to a 1.6% shrink. In absolutely empty space this scaling factor could be much larger.

14.3. Scale Stability

It is postulated that the nature of the Universe limits scaling due to velocity by employing the effects of gravity fields (General Relativity) and distribution of temperature via thermal communicators. The relative scaling function $s(v,x,y,z)$ intrinsically describes this. The closer an object is to a very large gravity source, it increases in size, but also increases in velocity due to gravity's attraction counteracting the increase in size and maintaining a stable size (scale).

This graph presents how a gravity field "resists" the relativistic effect of motion on an object. The result is lambda function (14.9) $\lambda \approx 1$ (no scaling) at low speeds and near a much larger object (planet, star). As the object's velocity increases, its distance also increases away from the large gravity source resulting in $\lambda > 1$. The closer to matter and gravity fields the object is as it accelerates, the flatter the graph resembling that of Einstein-Lorentz transform.

$$\lambda(v,x,y,z) = \left(\frac{v}{v_o(x,y,z)}\right) \tag{14.9}$$

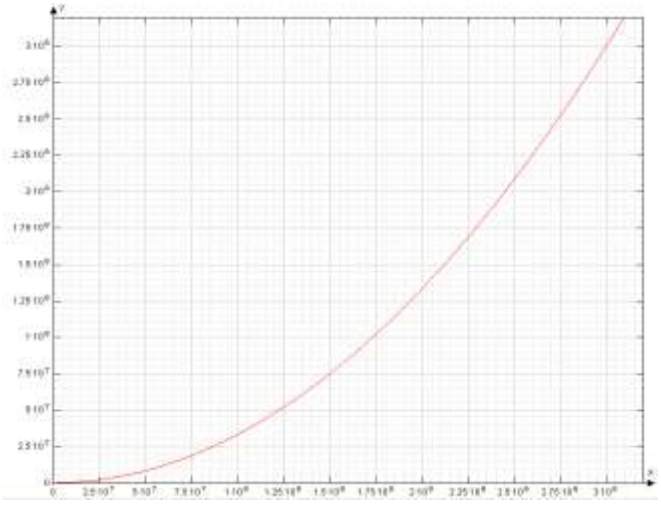

Fig. 14.1. λ where v approaches c

Accounting for an increasing distance as the object accelerates in velocity away from all known matter into the empty void of space, the graph sharply increases at low velocities. This is a hypothetical scenario because all known space is filled with matter (and "energy") that we can see and matter that we cannot (dark matter).

Remember that the initial velocity (v_o) is a gravity function inversely proportional to the distance from the object.

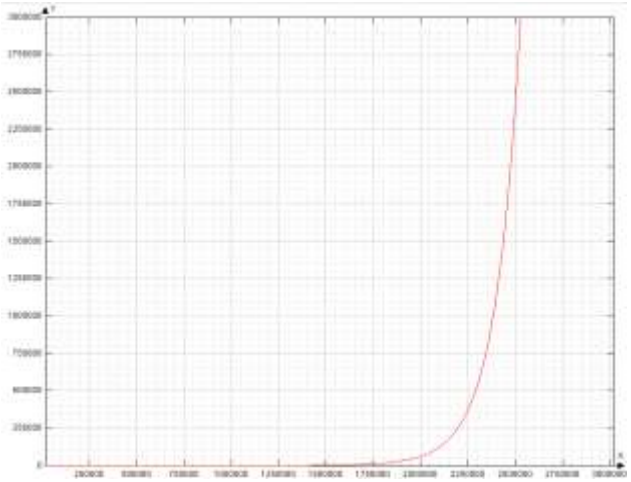

Fig. 14.2. λ where object accelerates away from all matter into absolutely empty space

15. Celestial to Quantum Mapping

The objective of this paper is to give a chart of possible velocities, inside or outside an atomic system, in order to match celestial to quantum objects using the theoretical framework described here. *It is important to note that this has never been done before, even if the values are not absolutely correct. As a result, it details a very viable alternative to Einstein's SRT.* It is to prove that this path of research is just as legitimate, if not more, as those currently accepted by mainstream science and that this is truly a proto-scientific theory.

15.1. Calculating Quantum Velocity

Based on the λ function, (11.9) in the initial model and (14.9) in the relative model, the velocity required to match their quantum counter-parts can be calculated using:

$$\lambda(v) = 2e\sqrt{\frac{m_o}{m_q}} \qquad (15.1)$$

In the initial linear model and in the relative model, where $v_o \to 1$ as $v \to c$, $\lambda(v)$ represents the numeric value of the velocity.

Remember that at the quantum scale, corresponding quantum Asteroid Belt objects travel at exactly the speed of light. This means that the outer system objects like the gas giant planets travel slower than the speed of light. This also means that the inner system objects, which form the atomic nucleus, travel faster than the speed of light.

15.2. Initial Problem with Mapping

Neutrons reportedly have no charge, but using this equation (12.3) a result of absolute 0 would require a velocity of ∞ which is highly unlikely. Unfortunately data on any possible neutron charge is extremely sparse. Photons reportedly also have no charge, but this research was able to calculate a value with this framework which is 10 million times smaller than an electron's charge. It is postulated that a neutron's charge value is small enough to be undetected by our instruments. Also a neutron with charge would also explain its magnetic moment property.

This problem with a neutron's neutral charge property can be solved by analyzing density vs. velocity data for the Solar System's celestial objects, because velocity directly affects the spaces between atoms in matter directly affecting the matter's density. It will reveal a very interesting pattern.

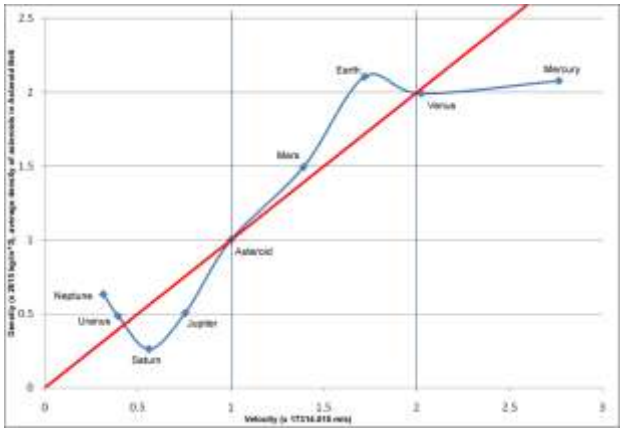

Fig. 15.1. Neutron velocities can be extrapolated and used to calculate resulting masses (or charges).

Here Figure 15.1, it details a density value which is a multiple of the average density (2615 kg-m^{-3}) of asteroids found in the Asteroid Belt

15.3. Important Results

Table 15.1 (*located at the end of this paper*) depicts initial celestial to quantum mapping based on equations (12.3), (15.1) and the data in Figure 15.1 for neutrons.

16. Energy Based C2Q Mapping

In Table 15.1, the speed of $2.7699c$ for neutrons and protons are far greater than our instrumentation have been able to achieve, but this research strongly suggests that this speed is very real and attainable by neutrons and protons especially within an atomic system and post atomic destruction. An obvious missing factor is the inclusion of angular velocity (rotational velocity) of the object and its contribution to the object's relation to space-time density in that it affects the object's size and mass along with linear velocity. Therefore $2.7699c$ might be the accumulated velocity representation of linear and angular velocity outside the atomic system. As linear velocity is retarded to c by obstructions in space (space-time and/or matter density obstructions), the object's angular velocity increases maintaining the object's original total kinetic energy. It is also possible that the protons we currently work with are far less massive than ¼ of the Sun's mass requiring only the velocity of c to give it the same charge which would mean the Sun has much smaller debris perceived by us as photons and radiation energy post atomic destruction. The fact remains that the data on the inner most planet,

Mercury, and the theoretical research on the celestial proton are remarkably almost the same velocity which is $2.7699\text{x}17315$ m/s.

16.1. Kinetic Net Velocity of an Object's Movement

All movement through space contributes to the space-time density experienced by the object in motion which can be derived to a single net linear velocity component.

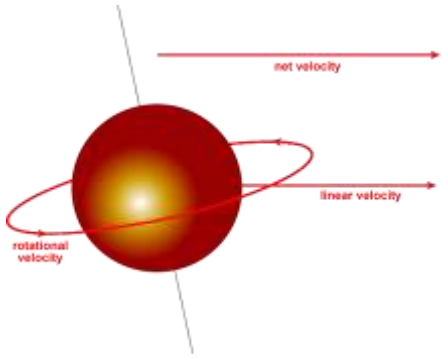

Fig. 16.1. Kinetic Net Velocity Component

The calculations are simple:

$$K_{\text{linear}} = \frac{m(v_{\text{linear}})^2}{2} \tag{16.1}$$

$$K_{\text{rotational}} = \frac{m(v_{\text{rotational}})^2}{2} \tag{16.2}$$

$$K_{\text{total}} = K_{\text{linear}} + K_{\text{rotational}} \tag{16.3}$$

$$v_{\text{net}} = \sqrt{\frac{2K_{\text{total}}}{m}} \tag{16.4}$$

16.2. System's Relative Quantum Velocity

A planet's natural relative velocity at the quantum scale is a ratio between the planet's natural velocity at the celestial scale and the celestial speed of light of 17315 m/s. 17315m/s is special, because it is the numerical square root value of c and it is also the orbital velocity of a unique formation within the system containing many asteroids dividing the inner and outer systems.

$$v_{\text{quantum}} = \left(\frac{v_{\text{planet}}}{c_s} \right) \cdot c \tag{16.5}$$

$$c_s = 17314.5159 \text{ m/s} \tag{16.6}$$

$$c = 299792458 \text{ m/s} \tag{16.7}$$

$$17314.5159 = \sqrt{299792458} \tag{16.8}$$

16.3. Important Results

Tables 16.1 and 16.2 (*located at the end of this paper*) detail the celestial to quantum mapping results of these energy based calculations detailed in this section.

16.4. Analysis of Neutrons

In Tables 16.1 and 16.2, Mars and Venus have the exact same quantum charge value of $8.7\text{x}10^{-24}$ C which is also the same as the average charge of $8.7311\text{x}10^{-24}$ C. It is assumed that the neutron's actual charge is $8.7311\text{x}10^{-24}$ C. Earth's quantum charge value divided by the average $8.7311\text{x}10^{-24}$ C is 2.9479. Earth's charge is almost exactly 3 times the charge of Mars and Venus. Mercury's charge is less the 3 times that of the Earth's Moon which 81 times smaller than the average charge of $8.7311\text{x}10^{-24}$ C. It is negligible and not in the same class as that of Venus, Mars or Earth. The conclusion is that Venus and Mars are neutrons and the Earth is actually 3 neutrons giving our system a total of 5 neutrons (stable Beryllium atom).

16.5. Analysis of Electrons

Saturn's charge is almost exactly equal to an electron's charge of $1.6022\text{x}10^{-19}$ C. Jupiter's quantum charge is 75.3146% of an electron's charge. Jupiter's linear velocity is also 75.48% that of celestial speed of light (17315 m/s). A small change in kinetic net velocity would give it a charge closer to $1.6\text{x}10^{-19}$ C. In a Beryllium atom, Uranus and Neptune are in the position to valence electrons which share charge with other systems. Uranus is exactly 4.9302 times the electron's charge. Neptune is 15.9041 times the electron's charge. 4.93 and 15.9 are both almost whole numbers. This appears to have something to do molecular bonds because 15.9 is exactly the atomic mass of Oxygen. Could our Beryllium system be connected to an Oxygen star system and some other system(s)?

16.6. Proton Calculated

The following details how ¼ of the Sun's mass is used to calculate the velocity needed by this mass to achieve a charge held by a proton of $1.6022\text{x}10^{-19}$ C at the quantum scale using equation (15.1). In this framework kg and C are interchangeable.

$$v_{\text{proton}} = \sqrt[2e]{\frac{m_{\frac{1}{4}\text{Sun}}}{1.6022\text{x}10^{-19} \text{ kg}}}$$

$$v_{\text{proton}} = 2.7669c \tag{16.9}$$

17. Photon

How much mass is actually absorbed and released by excited atoms using the Reality Scale Constant S and this framework of mass at the celestial scale being charge at the quantum scale. First off is the very well known electromagnetic energy equation:

$$E = hf$$

$$h = 6.62606896\text{x}10^{-34} \text{ J-s}$$

h = Plank's constant, but Plank himself didn't believe this value was constant or well defined but that it worked for the time being.

Next is matching photon energy to another energy equation for kinetic energy and applying the photonic velocity of the speed of light ($v=c$) we get the following:

$$E = \frac{1}{2} m_q v^2 = hf \tag{17.1}$$

$$E = \frac{1}{2} m_q c^2 = hf \tag{17.2}$$

$$m_q = \frac{2hf}{c^2} \tag{17.3}$$

Calculate at various light frequencies, where $f = 10^0$ Hz

$$m_q = \frac{2\left(6.62606896\text{x}10^{-34}\ \text{J}\cdot\text{s}\right)\left(10^{0}\ \text{Hz}\right)}{c^2} = 1.4725\text{x}10^{-50}\ \text{C} \quad (17.4)$$

Now at the high frequency range where $f = 10^{24}$ Hz

$$m_q = \frac{2\left(6.62606896\text{x}10^{-34}\ \text{J}\cdot\text{s}\right)\left(10^{24}\ \text{Hz}\right)}{c^2} = 1.4725\text{x}10^{-26}\ \text{C} \quad (17.5)$$

Since we now have a possible photonic charge range, let's calculate the celestial mass equivalent using (12.3) where $s(v) = S$ when $v = c$.

$$m_q = \frac{m_o}{S^2}$$

$$m_o = m_q S^2 \quad (17.6)$$

Combining the resulting values for (17.4) and (17.5) with (17.6) to derive the equivalent celestial mass results in the following:
for $m_q = 1.4725\text{x}10^{-50}$ C

$$m_o = \left(1.4725\text{x}10^{-50}\ \text{C}\right)S^2 = 1.1025\text{x}10^{-9}\ \text{kg}$$

for $m_q = 1.4725\text{x}10^{-26}$C

$$m_o = \left(1.4725\text{x}10^{-26}\ \text{C}\right)S^2 = 1.79\text{x}10^{20}\ \text{kg}$$

These values fall within an acceptable range of object masses found in the Asteroid Belt including space dust.

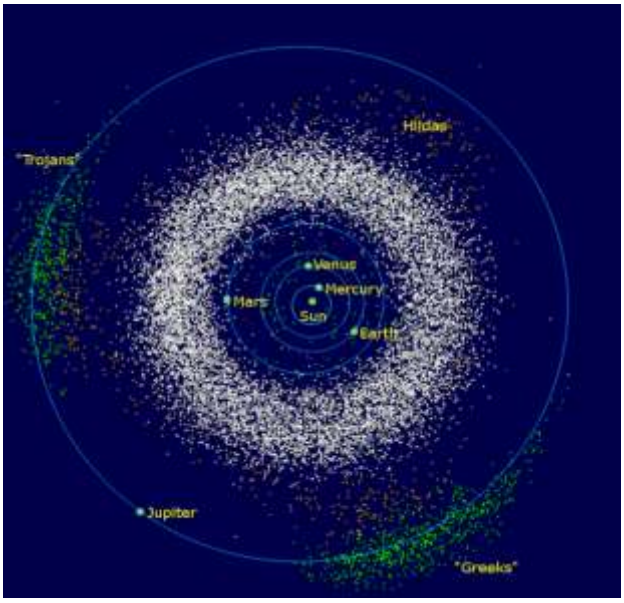

Fig. 17.1. Celestial Photons

17.1. Celestial Photons

The asteroids in our system between Mars and Jupiter are celestial photons. These asteroid groups are a repository of celestial photons and depict the level of "energy" our system has, or how excited it is, akin to an atom that is externally heated. It is postulated that a "heated" star system, absorption of external matter from asteroids to space dust, diminishes by obstruction the star's gravitational attraction to the outer system planets having them expand their orbit akin to an electron raising an energy level.

17.2. Photon Ejection

The gravity by the largest gas-giant planet nearest the Asteroid Belt will absorb incoming asteroids, and other masses, and will also eject asteroids from the Asteroid Belt including asteroids from the Greeks, Trojans and Hildas clusters. It is postulated that the celestial equivalent of thermodynamic atomic mechanics occurs at the celestial scale as it does at the atomic scale where macroscopic sized masses in the star system represent celestial atomic levels of energy.

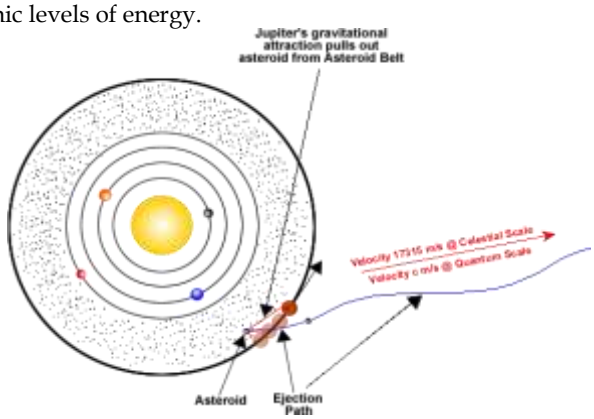

Fig. 17.2. Celestial Photon Ejection

Celestial photons are comprised of one or more asteroids at the quantum scale. They travel in a wave like pattern due to their rotational velocity and, if in a group of asteroids, due also to their gravitational attraction and repulsion between each other. The greater the mass (charge), the higher the frequency. When dispersed, the collective charge is less reducing the magnetic and electric field strength, but when close together, the charge is greater increasing the magnetic and electric field strength.

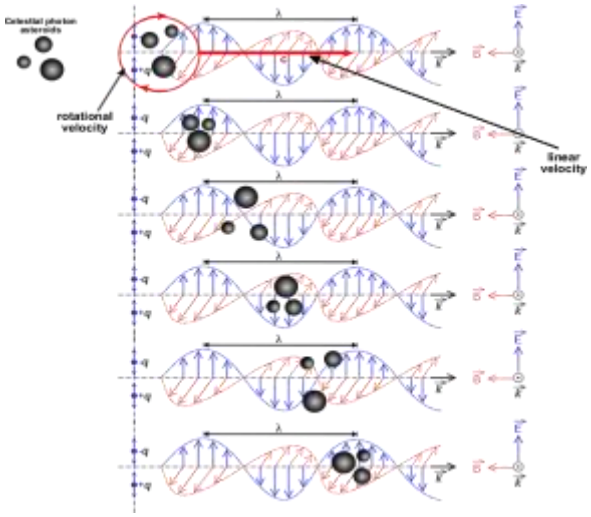

Fig. 17.3. Propagation of Celestial Photons

18. Quantum Speed of Light

The squaring of our speed of light gives the speed of light at the other reality scales:

$$c_o = 299792458\ (\text{no units}) \quad (18.1)$$

$$\sqrt{c_o} = 17314.515 \quad (18.2)$$

$$c_o{}^2 = 9.0x10^{16} \quad (18.3)$$

$$c = 299792458 \text{ m/s} \tag{18.4}$$

$$c_s = 17314.515 \text{ m/s} \tag{18.5}$$

$$c_q = 9.0\text{x}10^{16} \text{ m/s} \tag{18.6}$$

$$\left(c_o^1\right)^e = S, \left(c_o^2\right)^e = S^2, \left(c_o^3\right)^e = S^3 \tag{18.7}$$

Our speed of light is c, the celestial speed of light is c_s and the quantum speed of light is c_q. This means that traveling to Alpha Centuri which is $4.1343\text{x}10^{16}$m (4.37 light years) away at c_q would take 0.46 seconds. The communication applications are staggering. Speculating, this is possibly why we haven't received any intelligent space communications. We don't have a quantum radio (yet) to receive these types of communications.

19. Stationary Positioning

A plausible explanation for the stationary positioning of atomic systems, post a theoretical primordial Universal explosion (Big Bang), is to take a star system and accelerate it. As this system's linear velocity increases, the system starts to shrink and due to the system's natural spin its path of acceleration will curve into a spiral. When it reaches the speed of light along this path, becoming an atom in the process, all of its linear velocity transfers to rotational velocity giving it a stationary position at (x,y,z).

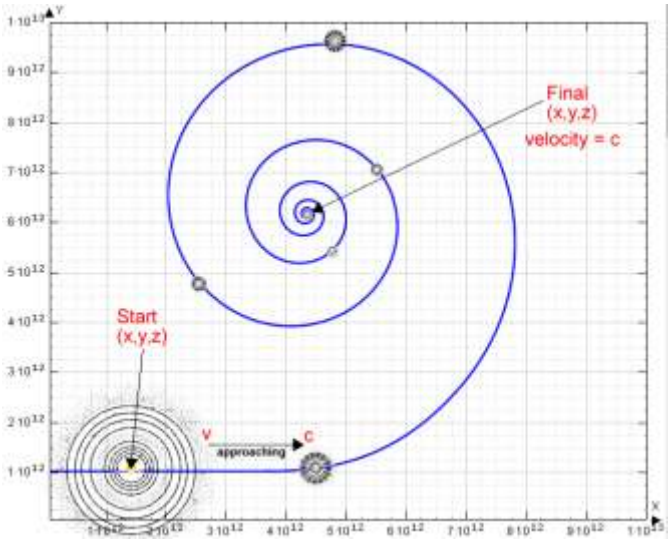

Fig. 19.1. Stationary Positioning

20. Shape of Atom

The most difficult perceptional barrier to bypass for most people is the perceived shape of a star system at the quantum scale to match the many types of electron orbitals detailed in modern atomic science. The resolution to this perception barrier is to fully understand the enormous speeds electrons travel at such a small scale with regards to an accelerated reference of time. Understanding the relative difference in the passage of time using this paper's framework, it is easily stated that the shape of an atom is literally a blur and equivalent to viewing the collective structural changes of a star system over billions of years but viewed in a small fraction of a second from our frame of reference.

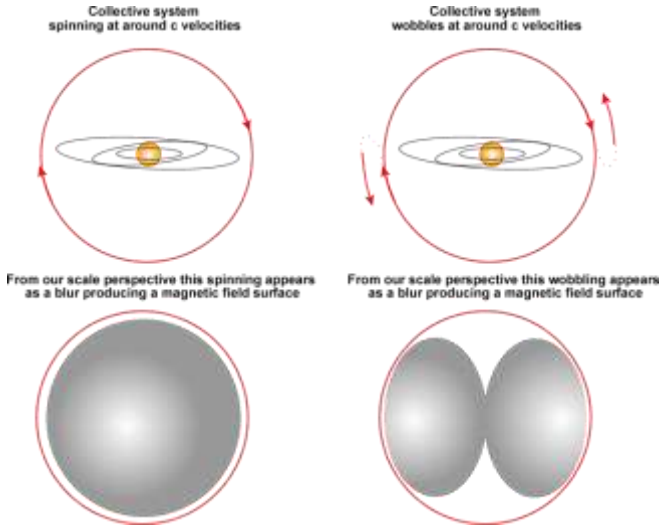

Fig. 20.1. Atomic shape from an accelerated time frame of reference

20.1. Example

The measured radius of Be (Beryllium) atom is 105pm. The measured radius of Neptune is $4.534\text{x}10^{12}$m and orbital velocity is 5430 m/s. Using circumference ($C = 2\pi r$) the following is calculated:

$$\text{orbits/s} = \frac{5430 \text{ m/s}}{2\pi(105\text{pm})} = 8.2306\text{x}10^{12}/\text{s}$$

At an estimated electron orbital velocity of 0.10c m/s = $3x10^7$ m/s:

$$\text{orbits/s} = \frac{3\text{x}10^7 \text{ m/s}}{2\pi(105\text{pm})} = 4.55\text{x}10^{16}/\text{s}$$

At such a small scale, either velocity will appear as a complete blur, and produce a magnetic field (hard shell) as perceived by us due to the object's charge in motion which accounts for an atom's luster characteristic. At $r = 105\text{pm}$:

For 5430 m/s

$$\Delta t = \left(8.2306\text{x}10^{12}\right)\left(5.2422\text{x}10^9\right) = 4.2889\text{x}10^{22} \text{ s} = 1.35\text{x}10^{15} \text{ years}$$

For 0.10c m/s

$$\Delta t = \left(4.5473\text{x}10^{16}\right)\left(5.2422\text{x}10^9\right) = 2.3837\text{x}10^{26} \text{ s} = 7.5587\text{x}10^{18} \text{ years}$$

21. Orbital Energy Levels

In this framework, it is obvious energy is not independent of matter at any scale. Atomic orbital energy levels contain material electrons which are gas-giant planets in this framework. These levels exist in direct relation to the mass of these matter objects and their kinetic energy due to an orbital velocity generated by the large core object. Remember that at velocities near and beyond c at the picometer radii, these orbital matter objects (charge=mass) appear as a blur producing a magnetic field shell which at our scale appears as an energy level.

$$F_c = \frac{mv^2}{d} = F_g = \frac{GMm}{d^2} \tag{21.1}$$

$$v = \sqrt{\frac{G(M+m)}{d}} \tag{21.2}$$

Celestial energy levels are related to a balancing dance between centripetal and gravity force. Gravity communicators disperse the further away they travel weakening the force communicated by them through wave theory.

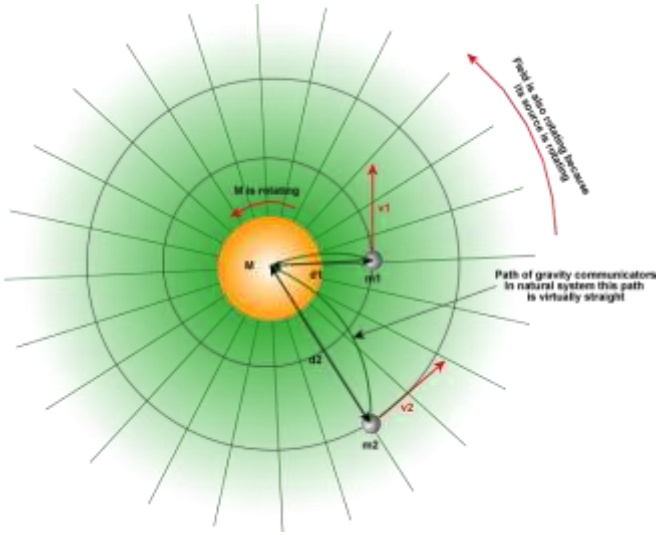

Fig. 21.1. Celestial Energy Levels

22. Reverse Uncertainty Principle

The further into the future we attempt to predict the position of a celestial object in a star system, the more erroneous our predictions will become in relation to the actual position of that object due to unknown internal or external compounded influences. Within this framework, as a star system increases in velocity approaching, it becomes an atom where the Heisenberg Uncertainty Principle describes the difficulty of determining the position of quantum particles in an atom. The Reverse Uncertainty Principle is the Heisenberg Uncertainty Principle where the two are perceived from two different directions.

23. Charge

If star systems and atoms are the same thing in two very different levels of space-time density then what would constitute positive and negative charge at the celestial scale? The concept of positive and negative refer not to an isolated characteristic specific to a single particle, but are defined by how various particles interact with each other. Positive and negative refer to the action of whether particles attract or repel each other. The label of "positive" and "negative" is a human invention to categorize particles in association to how they interact. Therefore, at the celestial scale, how do various celestial objects interact? Do some attract while others repel? Currently, classic gravity theory states that gravity only attracts, but gravity (in the traditional sense) alone does not completely define all attraction and repulsion behavior between celestial objects. Stars and large gas-giants are very hot and continuously expel heat in the form of particles including photons which can exert a repelling force on other celestial objects. This obvious repelling force created by large celestial objects like stars and gas-giants exert a certain force per square area on other objects. If the area is small, like a rock planet vs. gas-giant, then the gas-giant's expelled heat will not exert enough force to repel the rock planet to overcome the attraction of gravity. If the area is big, like gas-giant vs. gas-giant, then the expelled heat from both gas-giants will exert enough force to overcome gravity and repel each other. This alone defines a type of celestial charge, but it's a bit more complicated.

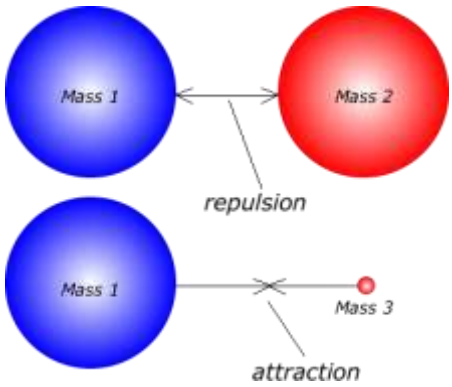

Fig. 23.1. Celestial Charge

23.1. Celestial Charge

Celestial charge is directly related to gravity interaction between different mass-densities.

23.2. Refining Gravity

If expelled heat from large celestial objects can exert a repelling force overcoming gravity attraction, then what fully is gravity? Does the full definition of gravity also constitute this repelling force? Looking at the quantum realm for clues, it is well known that charge force can travel large distances. This causes a problem for expelled heat repulsion force because it would be strongest at fairly close distances and diminish greatly over larger distances. Quantum charge force appears to travel, relatively, indefinite distances only diminishing depending on the medium and what it encounters (blocks it).

It is postulated that gravity and wave theory are married. If gravity force travels at the speed of light, then light (full spectrum) is what causes gravity. Light travels indefinitely unless impeded. Light has wave properties, therefore gravity must adhere impart to wave theory. The full spectrum of expelled energy waves from a planet, manifesting a slow heat, magnetic fields, particles, photons and other quanta, collectively constitute the effect of gravity and all adhere to wave theory.

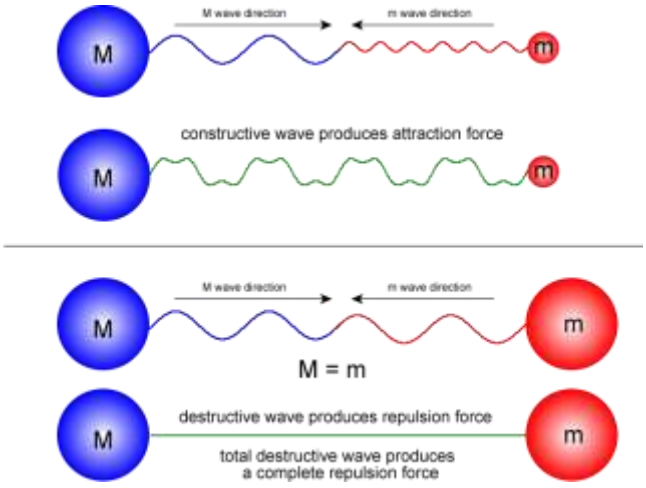

Fig. 23.2. Gravity and Wave Theory 1

Wave theory is wonderfully complex in its interactions between free floating sources of expelled wave communicators of various magnitudes and an infinite range of frequencies.

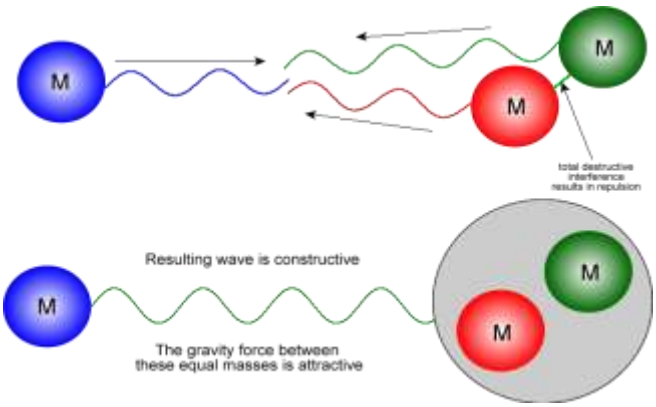

Fig. 23.3. Gravity and Wave Theory 2

23.3. Thermodynamic Wave theory Example

Wave theory manifests in many unsuspected representations. For example, a cold object and hot object floating freely in space attract each other. The cold object absorbs the heat expelled by the hot object via various expelled communicators (quanta, particles and photons). Two hot objects of equal temperature will repel each other via communicators adhering to wave theory. Overtime, the two objects, systems, could reach thermal equilibrium if the they are of equal mass-density by becoming of equal temperature, but if they are not equal one will always be hotter than the other again due to *internal constructive wave buildup in the matter objects*.

23.4. Gravity with Charge

The following mathematical formulation details the mass-density relationship between two objects in relation to wave theory interaction to derive a mathematical representation of charge. In (23.1), ρ is density and m is mass.

$$\delta = \sqrt{\left(\frac{m_1\rho_2 - m_2\rho_1}{m_1\rho_2 + m_2\rho_1}\right)^2} \tag{23.1}$$

$$\text{Charge Component} = 2\delta - 1 \tag{23.2}$$

If both objects are the same or very similar, (23.2) is -1, which symbolizes repulsion. If both objects are significantly different then (23.2) results in +1 which symbolizes attraction. This equation is simplistic as it does not include the more complex behavior in wave theory when multiple objects (wave sources) are involved in various compositions, organizations and groups. The reason was to keep this paper short as wave theory in relation to this framework would require a lengthy paper of its own.

24. Force

The logic, concepts and theory described previously can now be used to describe force within this framework.

$$F = ma = m\left(\frac{v}{\Delta t}\right),\ F = MLT^{-2} \tag{24.1}$$

Dimensionally, force has two time components (T^2) described in its acceleration variable defined by the unit of seconds squared. There is also a mass component (M) and distance component (L). The framework in this paper states that as an object accelerates towards the speed of light, its mass decreases, its collective size decreases and its perceived passage of time increases. This also means that the distance component (L), the measurement of, in relation to the object's velocity and acceleration, is invariant at all scales thus has no transformation as velocity increases. This logic derives equation (24.2) by combining (12.3) and (13.4) with (24.1).

$$F = \left[\frac{M}{s(v)^2}\right]\left[\frac{L}{1}\right]\left[\frac{T}{\tau(v)}\right]^{-2} \tag{24.2}$$

Therefore combining (12.3) , (13.4) with (24.1) and (24.2) results in (24.3) and an increase in relative force because the communicators of force at the quantum scale travel faster than at the celestial or macroscopic scale.

$$F = m_o a\left(\frac{\tau(v)^2}{s(v)^2}\right) \tag{24.3}$$

24.1. Gravity Field of Force

Eq. (24.3) has one mass component and two time components resulting in (24.5). Component g is the force acceleration field.

$$g = \frac{GM}{d^2} \tag{24.4}$$

$$g = \frac{GM}{d^2}\left(\frac{\tau(v)^2}{s(v)^2}\right) \tag{24.5}$$

Once again this shows that the field of force (24.4) increases in strength as the object's total kinetic velocity increases.

24.2. Gravity Force Becomes Electric Force

$$F_g = \frac{Gm_1m_2}{d^2} \rightarrow F_e = \frac{k_e q_1 q_2}{d^2}$$

Here Coulomb's electric force constant and Newton's gravitational constant are $k_e = 8.9876\text{x}10^9\ \text{N}\cdot\text{m}^2/\text{C}^2$ and $G = 6.673\text{x}10^{-11}\ \text{m}^3/\text{kg}/\ \text{s}^2$ respectively.

Gravity force equals electric force equation when the net velocity, net kinetic energy derived from rotational and linear velocity, of the *collective* system is equal to a specific net kinetic velocity which is near the speed of light.

$$F = \frac{Gm_1m_2}{d^2}\left[\frac{\tau(v)^2}{s(v)^2}\right] \rightarrow \frac{k_e q_1 q_2}{d^2} \tag{24.6}$$

$$F = \frac{G}{d^2}\left(2\sqrt{\left(\frac{m_1\rho_2 - m_2\rho_1}{m_1\rho_2 + m_2\rho_1}\right)^2} - 1\right)\left(\frac{m_1(\tau(v_1))}{s(v_1)}\right)\left(\frac{m_2(\tau(v_2))}{s(v_2)}\right) \tag{24.7}$$

Equation (24.7) combines the charge component (23.1) and (23.2) to direct the direction of force along with separating individual mass velocities related to net kinetic energy per object.

24.3. Gravity = Electric Force Velocity Component

Using the relative scaling equation we can determine an initial net kinetic velocity. In this framework, mass and charge are

the same thing a two different points on the velocity spectrum, therefore in (24.8) mass (Mm), charge (q_1q_2) and distance (d) can be eliminated leaving only the transforms and constants. *This analysis takes two identical mass pairs. One pair remains stationary in its perceived macroscopic mass while the other pair is moving collectively near c in its quantum charge state.*

$$\frac{GMm}{d^2}\left[\frac{\tau(v)^2}{s(v)^2}\right]=\frac{k_eq_1q_2}{d^2} \tag{24.8}$$

$$\frac{k_e}{G}=\frac{\tau(v)^2}{s(v)^2}=\left(\frac{v}{v_o}\right)^{2\pi-2e}=\left(\frac{v}{v_o}\right)^{0.8466}$$

$$\left(\frac{k_e}{G}\right)^{1.1812}=\frac{v}{v_o} \quad => \quad v=v_o\left(\frac{k_e}{G}\right)^{1.1812}$$

$$v=v_o\left(\frac{8.9876\text{x}10^{9}\ \text{N.m}^2/\text{C}^2}{6.673\text{x}10^{-11}\ \text{m}^3/\text{kg/ s}^2}\right)^{1.1812}=v_o(5.9810x10^{23}) \tag{24.9}$$

It is very interesting to note that number $5.9810x10^{23}$ is extremely close to Avogadro's constant of $N_A=6.02214x10^{23}$ at 99.32% similarity. In conclusion, the value of v_o is the following when v $=299809225m/s$.

$$v_o=5.0124\text{x}10^{-16}\ \text{m/s} \tag{24.10}$$

24.4. Comparing Electric and Gravitational Force

Traditionally in mathematical physics, using Einstein's theory of energy ($E=mc^2$) and the subsequently calculated rest mass of quantum particles, it has been well known that difference in force strength between electric and gravitational force is equal to $2.3x10^{39}$ (between electrons and protons). Within this paper's framework, this value is also calculated when comparing force strength between Jupiter and ¼ the Sun's mass with the force strength between a proton and electron in a scale ratio example.

$$\frac{F_e}{F_g}=\frac{\left[\frac{k_eq_1q_2}{d_q^2}\right]}{\left[\frac{Gm_1m_2}{d_o^2}\right]} \tag{24.11}$$

$$d_q=\frac{d_o}{s(v)} \tag{24.12}$$

$$\frac{F_e}{F_g}=\left[\frac{k_eq_1q_2}{Gm_1m_2}\right]\left[s(v)^2\right] \tag{24.13}$$

The key here is to make the $(k_eq_1q_2)=(Gm_1m_2)$ in order to eliminate it, because they are the same thing in this framework. This can be done by combining equation (24.6) with (24.13).

$$\frac{F_e}{F_g}=\left[\frac{k_eq_1q_2}{Gm_1m_2\left[\frac{\tau(v)^2}{s(v)^2}\right]}\right]\left[s(v)^2\right]=\left[\frac{k_eq_1q_2}{Gm_1m_2}\right]\left[\frac{s(v)^4}{\tau(v)^2}\right] \tag{24.14}$$

At a certain velocity, $(k_eq_1q_2)/(Gm_1m_2)=1$ and F_e/F_g results in $2.3x10^{39}$.

$$2.3x10^{39}=\frac{s(v)^4}{\tau(v)^2}=\left(\frac{v}{v_o}\right)^{4e-2\pi} \tag{24.15}$$

If $v_o=1$ m/s, then the following net kinetic velocity is required to achieve this value:

$$v=\left(2.3\text{x}10^{39}\right)^{0.21786}m/s$$

$$v=3.76\text{x}10^{8}\ \text{m/s} \tag{24.16}$$

The velocity component also accounts for rotational velocity in the context of total kinetic energy, which means that the linear velocity of the system of objects in question could still be equal to c .

What is significant about the $2.3\text{x}10^{39}$ difference between electric and gravitational force strength is that this value directly derives the currently accepted rest mass for an electron ($9.1\text{x}10^{-31}$ kg) and proton ($1.67\text{x}10^{-27}$ kg).

25. The Galaxy

The following is an amusing quick look at some aspects related to galaxies but within the framework detailed in this paper.

25.1. How Big is a Quantum Galaxy?

The variables of this amusing problem are Avogadro's number $N_A=$ $6.02214\text{x}10^{23}$ (atoms or molecules)/mol where 1 mol = (atomic or molecular weight of substance)x(1 gram), and 1 grain of sand at a radius of 0.0625mm and a mass of 0.003g.

How many atoms exist in a grain of sand?

$$SiO_2\ \text{molecules/1g}=\frac{6.02214x10^{23}}{\left(28.0885u+2\left(15.9994u\right)\right)(1\text{g})}$$

$$SiO_2\ \text{molecules/1g}=1.0024\text{x}10^{22}\ \text{molecule/g}$$

$=\left(3\ \text{atoms/molecule}\right)\left(1.0024\text{x}10^{22}\ \text{molecule/g}\right)\left(0.003\text{g}\right)$

$=\ 9.02\text{x}10^{19}$ atoms

This number of atoms ($9x10^{19}$) is an enormous number. At the celestial scale, $9x10^{19}$ star systems far exceeds our Milky Way's number of star systems which is estimated to be $3x10^{11}$. To put it in visual perspective that is 90,000,000,000,000,000,000 versus 300,000,000,000.

25.2. Galaxy in Orbit?

The galaxy is traveling at a velocity of about 600,000 m/s which might be the natural orbital velocity of our cluster of galaxies around a super-large, super-massive dense cluster of stars and galactic systems. This massive object could be perceived as its own Universe, but from this framework, it would be perceived as a planetoid at the next reality scale level (or possibly a massive black hole depending on its density). It's a matter of perspective. This unknown massive object, in this framework, would be extremely "hot" which might be the cause of the mys-

terious background radiation we are aware of and maintaining our existence at a certain level of space-time density.

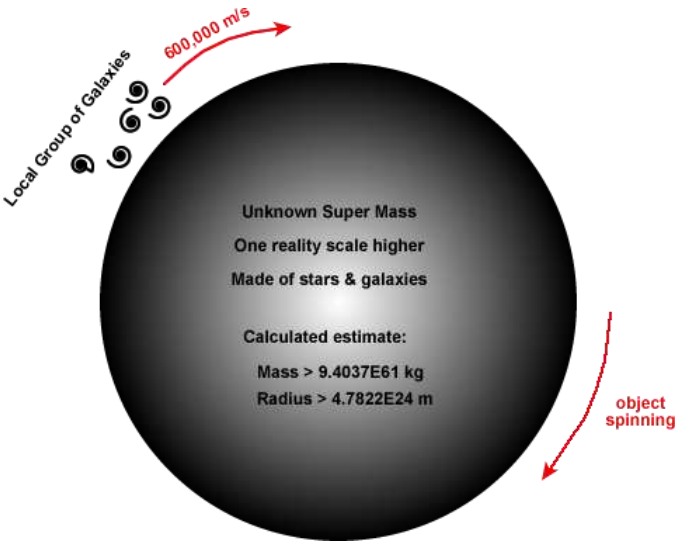

Fig. 25.1. Text?

26. Other Star Systems

Are other star systems structured the same in relation to the hypothesis of this paper? Initial data shows that the majority of other star systems also have planets where there are rock planets in the inner star system and gas-giants planets in the outer system. This follows the hypothesis of this framework. It is also good to note that the methods to view these systems and their properties are far from perfect and can have a high degree of error.

27. Conclusion

The very simple and intuitive framework detailed in this paper has many extremely interesting mathematical results. The mathematical mapping of celestial to quantum objects highly suggests that this paper's hypothesis is correct which has enormous implications. This research and theoretical framework strongly implies that the Universe is infinite in size and scale, which in itself has further and far reaching implications. This research strongly suggests that star systems live much longer than previously estimated. It also suggests that black holes are possibly nothing more than very dense and heavy celestial atomic systems akin to a celestial Uranium star system. It becomes evident in this work that quantum, atomic, macroscopic and cosmological mechanics are interchangeable allowing us to learn much more than we've ever thought possible. The framework in this paper gives us a system of reference for this scientific interdisciplinary exchange. There are numerous and wonderful applications that can arise from this research like the briefly mentioned faster than light communication. Science has a lot to revisit and many theories to abandon or mend if this framework is even partially correct such as the current age of the Universe, the light speed limit and certain highly theoretical theories. It is the job of science to continually question and challenge everything including its most treasured beliefs in order to discover the fundamental truth behind nature.

Celestial Object	Initial Mass (kg)	Velocity (m/s)	Velocity (c)	Final Mass (kg) or (C)	Quantum Object
Neptune	1.02E+26	174403583	0.5817	1.60E-19	Electron
Uranus	8.68E+25	169216298	0.5644	1.60E-19	Electron
Saturn	5.68E+26	239089742	0.7975	1.60E-19	Electron
Jupiter	1.90E+26	298449669	0.9955	1.60E-19	Electron
Asteroid	2.75E+15	299792458	1	2.2618E-31*	Photon
Asteroid	1.79E+20	299792458	1	1.47E-26	Photon @1E24Hz
Mars	6.42E+23	447560118	1.4929	5.98E-24	Neutron
Earth	5.98E+24	630823231	2.1042	8.62E-24	Neutron
Venus	4.87E+24	596616914	1.9901	9.50E-24	Neutron
Mercury	3.30E+23	622279146	2.0757	5.1208E-25**	Neutron
Sun/4	0.4973x1030	830984370	2.7699 ≈2.71828	1.60E-19	Proton

Table 15.1

***** Note that this mass (or charge) is considered 0 by our instrumentation (over 10million times smaller than an electron's charge). Photon calculations are shown in Section 17.

****** It's interesting that Mercury's resulting mass is about 16 times smaller than the other inner planets. This might be related to its unique orbit.

obj	mass kg	radius m	v rot m/s	v sat m/s	v linear m/s	E rot J	E linear J	E total J	v net m/s
4p	1.99E+30	6.96E+08	1989		47870	3.93E+36	2.28E+39	2.28E+39	47911.3
mr	3.30E+23	2.44E+06	3.026		47870	1.51E+24	3.78E+32	3.78E+32	47870
v	4.87E+24	6.05E+06	1.81		35020	7.97E+24	2.99E+33	2.99E+33	35020
e	5.97E+24	6.37E+06	465.1		29783	6.46E+29	2.65E+33	2.65E+33	29786.63
em	7.35E+22	1.74E+06	4.627	1022	29783	7.86E+23	3.26E+31	3.26E+31	29783
m	6.42E+23	3.40E+06	241.17		24077	1.87E+28	1.86E+32	1.86E+32	24078.21
j	1.90E+27	7.15E+07	12600		13070	1.51E+35	1.62E+35	3.13E+35	18154.47
s	5.68E+26	6.03E+07	9870		9690	2.77E+34	2.67E+34	5.44E+34	13831.59
u	8.68E+25	2.56E+07	2590		6810	2.91E+32	2.01E+33	2.30E+33	7285.891
n	1.02E+26	2.48E+07	2680		5430	3.68E+32	1.51E+33	1.88E+33	6055.353

Table 16.1

obj	v net:c (ratio) m/s	v net:c c	vnet c qmass C (or kg)	qmass avg. C (or kg)	expected q C (or kg)	actual v:c m/s	actual v c
4p	8.30E+08	2.77	6.47E-19		6.41E-19	8.31E+08	2.7718
mr	8.29E+08	2.76	1.08E-25		8.73E-24	3.69E+08	1.2322
v	6.06E+08	2.02	8.70E-24		8.73E-24	6.06E+08	2.0213
e	5.16E+08	1.72	2.57E-23		8.73E-24	6.29E+08	2.0988
em	5.16E+08	1.72	3.17E-25		8.73E-24	2.80E+08	0.9346
m	4.17E+08	1.39	8.79E-24	8.73E-24	8.73E-24	4.17E+08	1.3924
j	3.14E+08	1.05	1.21E-19		1.60E-19	2.98E+08	0.9953
s	2.39E+08	0.8	1.59E-19		1.60E-19	2.39E+08	0.7973
u	1.26E+08	0.42	7.90E-19		1.60E-19	1.69E+08	0.5643
n	1.05E+08	0.35	2.55E-18	9.04E-19	1.60E-19	1.74E+08	0.5817

Table 16.2

Legend:
Objects (obj): 4p = Star/Sun 4 protons; mr = Mercury; v = Venus; e = Earth; em = Earth's Moon; m = Mars; j = Jupiter; s = Saturn; u = Uranus; n = Neptune
Quantities: E = kinetic energy; q or qmass = charge/quantum mass (this framework); v rot = rotational velocity, v sat = satellite orbital velocity; v linear = linear velocity; v net = velocity derived from total kinetic energy (Eq. 16.4); v net:c = quantum velocity (Eq. 16.5)

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